

# PATENT SPECIFICATION

NO DRAWINGS

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## COMPLETE SPECIFICATION

### Improvements in or relating to Metal Protecting Preparations

We, J. GODDARD & SONS LIMITED, a British Company, of 15/35, Nelson Street, Leicester, do hereby declare the invention, for which we pray that a Patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention is for improvements in or relating to metal protecting preparations and is concerned more particularly with a metal treating preparation which incorporates a medium by which a cleaned metal surface is protected so as to retain its cleaned state for a prolonged period. The invention is particularly concerned with preparations for cleaning metal surfaces containing silver, copper or nickel, and has for one of its objects to provide an effective preparation which is capable of being prepared in a simple manner and incorporates relatively inexpensive ingredients.

A preparation for polishing silver has already been proposed which comprises a mild abrasive and an antitarnish agent, with the latter constituted by a mercaptan consisting of a straight chain alkyl primary thiol containing 12 to 20 carbon atoms. Such a preparation when used for cleaning and polishing silver causes an invisible protective coating to be formed on the cleaned metal surface which confers substantial protection against tarnishing as long as the coating remains intact reducing the frequency with which the silver requires to be cleaned. The anti-tarnishing component of the previously proposed preparation is in some respect lacking in desirable properties and the invention seeks to produce a metal treating preparation which employs as its protective ingredient a medium which besides being economical in cost offers the advantages of low toxicity, great stability resulting in a durable protec-

tion for the metal, and having a less objectionable odour than the mercaptan of the previous proposal.

In accordance with the invention there is provided a cleaning, protective or polishing preparation for metal surfaces containing silver, copper or nickel, comprising a cleaning or polishing medium in solid liquid or paste form or a surface treating medium in admixture with a protective medium consisting of an ester of a mercaptan carboxylic acid derived from an aliphatic alcohol having at least 12 carbon atoms. The preferred esters are derived from the thioglycolic or mercapto-propionic acid and an aliphatic alcohol having from 12 to 22 carbon atoms.

The protective medium may be admixed with a cleaning medium consisting of a physically acting abrasive or one consisting of or comprising a chemically reactive tarnish remover. The cleaning or polishing preparation may take the form of a liquid preparation adapted for application in the manner of a metal polish or a complex forming detarnishing solution or it may be in the form of a paste or cream. Further if desired the cleaning or polishing preparation may be provided in the form of a powder or a semi-solid block suitable for application to a buffing wheel, or it may be impregnated into fibre, fabric or braid normally used for cleaning or polishing operations being held therein either as a powder or as a semi-solid. Suitable metal treating preparations may consist of a pickling, detarnishing, brightening, de-scaling or etching bath. Thus by the incorporation of the protective medium any such bath may be caused to have tarnish inhibiting properties. The invention includes metal treating liquid protective preparations suitable for addition to a treatment bath for acting on surfaces

[Price]

containing silver, copper or nickel to impart tarnish inhibiting properties, such preparation consisting of a solution in an organic solvent of an appropriate ester of a mercapto carboxylic acid.

Particular examples illustrating how the invention can be carried into effect will now be given, the proportions of the constituents indicated being reckoned by weight.

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**EXAMPLE 1**

A liquid polishing preparation suitable for use on surfaces containing silver, copper or nickel contains the following substances in admixture:

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## Polishing powder

for example diatomaceous earth 20%

Ethyl alcohol 20%

Stearyl thioglycollate 2.5%

Phosphoric acid (as stabiliser) approx. 0.2%

Water up to 100%

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In preparing the preparation according to this example the stearyl thioglycollate is melted and heated to a temperature of approximately 100°C and is then added to the alcohol. Sufficient of the polishing powder is then added with vigorous stirring until a fairly viscous mixture is obtained. Continuing stirring with a high shear action some water is added and then alternate additions of polishing powder and water are made until the mixture is complete. The resultant mixture has a dispersion of thioglycollate on the surface of the polishing powder which is in turn homogeneously dispersed in the aqueous alcoholic liquid. The phosphoric acid is then stirred homogeneously into the mixture which is thereupon ready for bottling. Advantageously, to improve the stability of the suspension, bentonite may be incorporated in the proportion of 2 to 4% by weight. The bentonite may be incorporated by forming it to a gel with part of the water. This gel may be added to the viscous mixture aforesaid before the addition of water thereto.

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Acids other than phosphoric acid (for example acetic acid or hydrochloric acid) may be used in place of phosphoric acid to form a stabiliser, although phosphoric acid is preferred for this purpose. The stabilising effect is employed to prolong the shelf life of the liquid product.

**EXAMPLE 2**

A polishing paste for metal surfaces as aforesaid is made up as follows:—

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## Polishing powder

20%

Detergent paste 40%

Stearyl mercapto propionate 2.5%

Phosphoric acid (as stabiliser)

approx. 0.2%

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Water up to 100%

In preparing the paste the mercapto-propionate is first warmed with an equal weight of detergent paste and the resulting liquid is

added to the dry ingredients whilst being stirred. The formation of the stiff paste ensures homogenising of the final product. Afterwards the liquid content is added slowly whilst the mixture is stirred.

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**EXAMPLE 3**

An emulsion polish for metal surfaces as aforesaid is made up from the following ingredients:—

Stearyl thioglycollate	3 parts
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Diatomaceous earth	15 parts
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Hydrocarbon solvent	30 parts
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Anionic surfactant (surface active agent) for example sodium alkyl benzene sulphonate	8 parts
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Water	44 parts
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Phosphoric acid	0.2 parts
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The emulsion polish is prepared substantially as in Example 1 above.

**EXAMPLE 4**

A solvent based paste polish (as opposed to a water based paste polish such as in Example 2) is made up from the following ingredients:—

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Stearyl thioglycollate	3%
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Diatomaceous earth	15%
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Alcohol	4%
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Hydrocarbon solvent	66%
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Gelling agent	12%
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The stearyl thioglycollate is dissolved in the hydrocarbon solvent together with the gelling agent and thoroughly mixed. The alcohol is then added and homogeneously mixed. Finally the diatomaceous earth is stirred into the mixture.

**EXAMPLE 5**

A cleaning and polishing powder for use on metal surfaces as aforesaid comprises the following:—

Polishing powder

e.g. kieselguhr, aluminium oxide 98 grams 105

**EXAMPLE 6**

These constituents are thoroughly blended by grinding. The resulting preparation may be used as such or may be incorporated into a suitable polishing cloth or braid etc. 110

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A liquid protective preparation which may be added in a small proportion to a pickling, detarnishing, brightening, de-scaling or etching bath for acting on surfaces containing silver, copper or nickel, to impart tarnish inhibiting properties is formed by dissolving stearyl thioglycollate in iso propyl alcohol in the proportion of 2.5% by weight.

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**EXAMPLE 7**

An emulsion type dipping solution being a protective preparation suitable for treating metal surfaces as above mentioned by immer-

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sion therein or for adding in a small proportion to various kinds of baths as in example 6 is made up of the following constituents:—  
 5      Stearyl thioglycolate                    3 parts  
       Ethoxylated fatty alcohol                    3 parts  
       (fatty alcohol/ethylene oxide  
       condensate)  
       Phosphoric acid                            0.2 parts  
       Water    94 parts

## 10      EXAMPLE 8

A dipping solution of organic solvent type suitable for use in similar manner to Examples 6 and 7 is prepared by dissolving stearyl thioglycolate in a hydrocarbon solvent in the proportion of 2% thioglycolate to 98% solvent.

## 15      EXAMPLE 9

A solid polishing composition suitable for mechanical application comprises the following:—

20      Higher fatty acid (e.g. Stearic Acid)	19 parts
25      Microcrystalline Wax	8 parts
Polishing Powder c.g. Tripoli powder	1 part
Lauryl thioglycolate	80 parts
	12 parts

## 30      WHAT WE CLAIM IS:—

1. A cleaning, protective or polishing preparation for metal surfaces containing silver, copper or nickel, comprising a cleaning or polishing medium in solid, liquid or paste form or a surface treating medium in admixture with a protective medium consisting of an ester of a mercapto carboxylic acid derived from an aliphatic alcohol having at least 12 carbon atoms.

2. A preparation according to Claim 1, wherein the protective medium is admixed with a cleaning medium consisting of a physically acting abrasive or one consisting of or comprising a chemically reactive tarnish remover.

3. A preparation according to Claim 1 or Claim 2 in the form of a liquid preparation adapted for application in the manner of a metal polish.

4. A preparation according to Claim 1 or Claim 2 in the form of a complex forming detarnishing solution.

5. A preparation according to Claim 1 or Claim 2 in the form of a paste or cream.

6. A preparation according to Claim 1 or Claim 2 in the form of a powder or semi-solid block.

7. A preparation according to Claim 1 which consists of a pickling, detarnishing, brightening, de-scaling or etching bath.

8. A preparation according to any of the preceding claims in which the protective medium consists of an ester of thioglycollic or mercaptopropionic acid derived from an aliphatic alcohol having from 12 to 22 carbon atoms.

9. A preparation according to Claim 8 wherein the protective medium is stearyl thioglycolate or stearyl mercaptopropionate.

10. A cleaning or polishing or metal treating or protective preparation for metal surfaces containing silver, copper or nickel substantially as hereinbefore described in any of the Examples.

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